


PCT

INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference JWJ01277EP	FOR FURTHER ACTION	See Form PCT/PEA/416
International application No. PCT/US2005/023426	International filing date (day/month/year) 29.06.2005	Priority date (day/month/year) 29.06.2004
International Patent Classification (IPC) or national classification and IPC INV. A01N49/00		
Applicant UNIVERSITY OF FLORIDA RESEARCH FOUNDATION, INC.		
<p>1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.</p> <p>2. This REPORT consists of a total of 8 sheets, including this cover sheet.</p> <p>3. This report is also accompanied by ANNEXES, comprising:</p> <p>a. <input checked="" type="checkbox"/> sent to the applicant and to the International Bureau a total of 3 sheets, as follows:</p> <p><input type="checkbox"/> sheets of the description, claims and/or drawings which have been amended and are the basis of this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).</p> <p><input checked="" type="checkbox"/> sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.</p> <p>b. <input type="checkbox"/> (sent to the International Bureau only) a total of (Indicate type and number of electronic carrier(s)) , containing a sequence listing and/or tables related thereto, in electronic form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).</p>		
<p>4. This report contains indications relating to the following items:</p> <p><input checked="" type="checkbox"/> Box No. I Basis of the report</p> <p><input type="checkbox"/> Box No. II Priority</p> <p><input checked="" type="checkbox"/> Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</p> <p><input type="checkbox"/> Box No. IV Lack of unity of invention</p> <p><input checked="" type="checkbox"/> Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement</p> <p><input type="checkbox"/> Box No. VI Certain documents cited</p> <p><input checked="" type="checkbox"/> Box No. VII Certain defects in the international application</p> <p><input checked="" type="checkbox"/> Box No. VIII Certain observations on the international application</p>		
Date of submission of the demand 05.04.2006	Date of completion of this report 10.11.2006	
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Box No. 1 Basis of the report

1. With regard to the **language**, this report is based on
 - ☒ the international application in the language in which it was filed
 - ☐ a translation of the international application into , which is the language of a translation furnished for the purposes of:
 - ☐ international search (under Rules 12.3(a) and 23.1(b))
 - ☐ publication of the international application (under Rule 12.4(a))
 - ☐ international preliminary examination (under Rules 55.2(a) and/or 55.3(a))
2. With regard to the **elements*** of the international application, this report is based on *(replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report):*

Description, Pages

1-31 as originally filed

Claims, Numbers

1-27 as originally filed

- ☐ a sequence listing and/or any related table(s) - see Supplemental Box Relating to Sequence Listing
3. ☐ The amendments have resulted in the cancellation of:
 - ☐ the description, pages
 - ☐ the claims, Nos.
 - ☐ the drawings, sheets/figs
 - ☐ the sequence listing (*specify*):
 - ☐ any table(s) related to sequence listing (*specify*):
 4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).
 - ☐ the description, pages
 - ☐ the claims, Nos.
 - ☐ the drawings, sheets/figs
 - ☐ the sequence listing (*specify*):
 - ☐ any table(s) related to sequence listing (*specify*):

* If item 4 applies, some or all of these sheets may be marked "superseded."

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Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability

1. The questions whether the claimed invention appears to be novel, to involve an inventive step (to be non-obvious), or to be industrially applicable have not been examined in respect of:

☐ the entire international application,

☒ claims Nos. 1-21

because:

☐ the said international application, or the said claims Nos. relate to the following subject matter which does not require an international preliminary examination (*specify*):

☐ the description, claims or drawings (*indicate particular elements below*) or said claims Nos. are so unclear that no meaningful opinion could be formed (*specify*):

☐ the claims, or said claims Nos. are so inadequately supported by the description that no meaningful opinion could be formed (*specify*).

☒ no international search report has been established for the said claims Nos. 1-21

☐ a meaningful opinion could not be formed without the sequence listing; the applicant did not, within the prescribed time limit:

☐ furnish a sequence listing on paper complying with the standard provided for in Annex C of the Administrative Instructions, and such listing was not available to the International Preliminary Examining Authority in a form and manner acceptable to it.

☐ furnish a sequence listing in electronic form complying with the standard provided for in Annex C of the Administrative Instructions, and such listing was not available to the International Preliminary Examining Authority in a form and manner acceptable to it.

☐ pay the required late furnishing fee for the furnishing of a sequence listing in response to an invitation under Rules 13*ter*.1(a) or (b) and 13*ter*.2.

☐ a meaningful opinion could not be formed without the tables related to the sequence listings; the applicant did not, within the prescribed time limit, furnish such tables in electronic form complying with the technical requirements provided for in Annex C-*bis* of the Administrative Instructions, and such tables were not available to the International Preliminary Examining Authority in a form and manner acceptable to it.

☐ the tables related to the nucleotide and/or amino acid sequence listing, if in electronic form only, do not comply with the technical requirements provided for in Annex C-*bis* of the Administrative Instructions.

☐ See separate sheet for further details

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Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes: Claims	4,5,9,10,12-21,26,27
	No: Claims	1,3,6-8,11,22-25
Inventive step (IS)	Yes: Claims	9
	No: Claims	1-8,10-27
Industrial applicability (IA)	Yes: Claims	1-27
	No: Claims	-

2. Citations and explanations (Rule 70.7):

see separate sheet

Box No. VII Certain defects in the international application

The following defects in the form or contents of the international application have been noted:

see separate sheet

Box No. VIII Certain observations on the international application

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:

see separate sheet

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Re Item III**Non-establishment of opinion with regard to novelty, inventive step and industrial applicability**

1. The subject-matter of the newly filed set of claims has been broadened in certain aspects and restricted in some others, as compared to the original set of claims.

The subject-matter of new filed claims 1, 2 and 18 refers respectively to a method for controlling a leafhopper population with an insect growth regulator (IGR) and the use thereof for controlling said population. However, the search has been carried out on the subject-matter as originally filed which concerned juvenile hormone (JH) analogs. Although said analogs belong to the IGR-family (as stressed in the application on *page 4, lines 10-19*), the search has not been made for other IGR. Since there has been no search report established on said broadened scope, the newly filed set of claims will not be discussed in the present report.

2. In addition, the newly filed set of claims does not comply with the requirements of Article 34(2)(b) PCT because it extends beyond the disclosure as originally filed at least for the following reasons:

Most of the proposed embodiments, some of them being extracted from list or examples, which have been introduced in the amended set of claims (including amended dependent claims) were originally linked to JH analogs, JH or even to specific examples (e.g. methoprene). The fact of generalising said original subject-matter to IGR and claiming said new subject-matter contravenes the requirements of Article 34(2)(b) PCT. The specific combination of features which results therefrom was not to be found in the application as filed.

3. For those reasons, the present report has been established on the basis of the set of claims as originally filed.

Re Item V**Reasoned statement with regard to novelty, inventive step or industrial applicability;**

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citations and explanations supporting such statement

The documents to which this communication refers are numbered in their order of appearance in the international search report.

1. Novelty (Article 33(2) PCT)

1.1 The composition of independent claim 22 comprises:

- i) a juvenile hormone analog, and
- ii) at least one additional agent that is effective at controlling a leafhopper or treehopper pest.

The feature "*that is is effective at controlling a leafhopper or treehopper pest*" is a functional limitation. Functional features can only be allowed if a person skilled in the art would have no difficulty in providing some means of performing this function without exercising inventive skill (PCT Guidelines paragraph 5.21).

In the present case, the skilled artisan would have to carry out undue experimentation to test every single pesticidal agent in order to check if a composition comprising a juvenile hormone analog and said agent falls under the subject-matter of claim 22. The subject-matter of **independent claim 22 and dependent claims 23-27 is therefore not allowable.**

An incomplete search on said subject-matter however revealed some documents which anticipate the subject-matter of claims 22-25.

Indeed, documents **D10-D34** (see *abstracts* and *CAS Registry Numbers*) disclose insecticidal compositions comprising a juvenile hormone analog and an insecticide. Without evidence of the contrary, said documents **anticipate the subject-matter of claims 22-25.**

1.2 **D1** (*abstract*) discloses a method of controlling sharpshooters, in particular *Oncometopia facialis*, *Dilobopterus costalimai* and *Acrogonia terminalis*, by chemical sterilization using pyriproxyfen among other compounds.

Said document thus **anticipates the subject-matter of claims 1-3, 6-8 and 11.**

D2-D6 (see *cited parts in the international search report*) disclose the use of juvenile-

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hormone analogs for combatting insect pests, in particular leafhoppers, such as *Empoasca onukii* or *Arboridia apicalis*.

Said documents thus **anticipate the subject-matter of claim 1.**

D7 and **D8** (*abstracts*) disclose the use of juvenile hormone analogs to sterilize leafhoppers.

Said documents thus **anticipate the subject-matter of claim 1.**

2. Inventive step (Article 33(3) PCT)

Preliminary remark:

Compositions claims can only be regarded as involving an inventive step if their subject-matter exhibits a non-obvious and/or surprising effect. In the present case, said effect is linked to the technical effect as disclosed in the method claims. Inventive step could therefore only be acknowledged for compositions which exhibit a new and unforeseeable pesticidal effect.

- 2.1 The subject-matter of **claims 26 and 27 is regarded as a normal design** for the skilled artisan.
- 2.2 Since it is known from **D1** that sharpshooters can be controlled by pyriproxyfen, the subject-matter of **claims 4-8 and 10 is not considered to involve an inventive step** in the case where the juvenile hormone analog is pyriproxifen.
- 2.3 In view of **D2-D6** (see cited parts in the international search report), it further appears that the subject-matter of **claims 5 and 14-21 does not involve any inventive step** because:
 - the man skilled in the art would not had to invest inventive skills to adapt the teachings of said documents, namely that *Empoasca onukii* and grape leafhopper are controlled by a juvenile hormone analog, to the treatment of potato leafhopper (*Empoasca fabae*) and vineyard or grapevine (claims 5, 14 and 15);
 - the subject-matter of claims 16 is regarded as a normal design for the skilled artisan;
 - the subject-matter of claims 17 to 21 is suggested by said documents.

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- 3. Industrial applicability (Article 33(4) PCT)**
is acknowledged for the whole subject-matter as claimed.

Re Item VII

Certain defects in the international application

1. References to other documents may relate directly to the disclosure of the invention. If the matter the documents refer to is essential to satisfy the requirements of Article 5 PCT, this matter should be incorporated *expressis verbis* in the description because the patent specification should be self-contained regarding the essential features of the invention, i.e. capable of being understood without reference to any document. As a consequence, sentences or part of sentences including the expression "*incorporated herein by reference in its entirety*" should not be used (PCT Guidelines 4.26).
2. The units employed in the present application are not additionally expressed in terms of the units stipulated by Rule 10.1(a) and (b) PCT.
3. Contrary to the requirements of Rule 5.1(a)(ii) PCT, the relevant background art disclosed in the cited documents is not mentioned in the description, nor are these documents identified therein.

Re Item VIII

Certain observations on the international application

1. The first paragraph of the description is superfluous (see also VII.1 above).
2. The paragraph on *page 27, lines 19-22* lead to doubt concerning the matter for which protection is sought (PCT Guidelines C.III-4.3a).

Claims

We claim:

1. A method for controlling a leafhopper population with an insect growth regulator (IGR) said method comprising:
contacting said leafhopper population with said IGR; and
affecting the reproductive system of a female leafhopper while in diapause, thereby controlling said leafhopper population.
2. A method for controlling a leafhopper population, wherein said leafhopper population is a glassy-winged sharpshooter (*Homolodisca coagulata*) population, said method comprising:
contacting said glassy-winged sharpshooter population with an insect growth regulator (IGR); and
affecting the reproductive system of a female leafhopper, wherein said female leafhopper is a female glassy-winged sharpshooter, thereby controlling said glassy-winged sharpshooter population.
3. The method of claim 1 or 2, wherein said IGR is a juvenile hormone analog.
4. The method of claim 3, wherein said juvenile hormone analog is selected from the group consisting of epofenonate, fenoxycarb, hydroprene, kinoprene, methoprene, pyriproxyfen, triprene, and a combination of two or more of the foregoing.
5. The method of claim 4, wherein said juvenile hormone analog is selected from the group consisting of methoprene, kinoprene, and hydroprene.
6. The method of claim 5, wherein said juvenile hormone analog is methoprene.
7. The method of claim 2, wherein said female glassy-winged sharpshooter is in diapause.

8. The method of claim 2, wherein said female glassy-winged sharpshooter is a newly enclosed adult glassy-winged female.

9. The method of claim 3, wherein said female leafhopper is reproductively active.

10. The method of claim 3, wherein oviposition of said female leafhopper is suppressed or eliminated.

11. The method of claim 3, wherein said juvenile hormone analog interferes with oviposition of said female leafhopper.

12. The method of claim 1, wherein said female leafhopper is a sharpshooter.

13. The method of claim 12, wherein said female sharpshooter is a glassy-winged sharpshooter (*Homolodisca coagulata*).

14. The method of claim 1 or 2, wherein said IGR is formulated in a formulation selected from the group consisting of a liquid, a spray, a dust, a granule, and an aerosol.

15. The method of claim 1 or 2, wherein contacting said leafhopper population is by means selected from the group consisting of spraying, dusting, and sprinkling.

16. The method of claim 3, wherein said juvenile hormone analog is applied to any part of a plant.

17. The method of claim 1 or 2, further comprising applying at least one additional pesticidal agent wherein said additional pesticidal agent is not a juvenile hormone analog.

18. Use of an insect growth regulator (IGR) for controlling a leafhopper population during diapause, wherein said IGR affects oviposition of a female leafhopper to thereby control said leafhopper population.

19. Use of claim 18, wherein said IGR is a juvenile hormone analog.

20. Use of claim 18, wherein said juvenile hormone analog is selected from the group consisting of epofenonate, fenoxycarb, hydroprene, kinoprene, methoprene, pyriproxyfen, triprene, and a combination of two or more of the foregoing.

21. Use of claim 18, wherein said female leafhopper is a glassy-winged sharpshooter (*Homolodisca coagulata*).